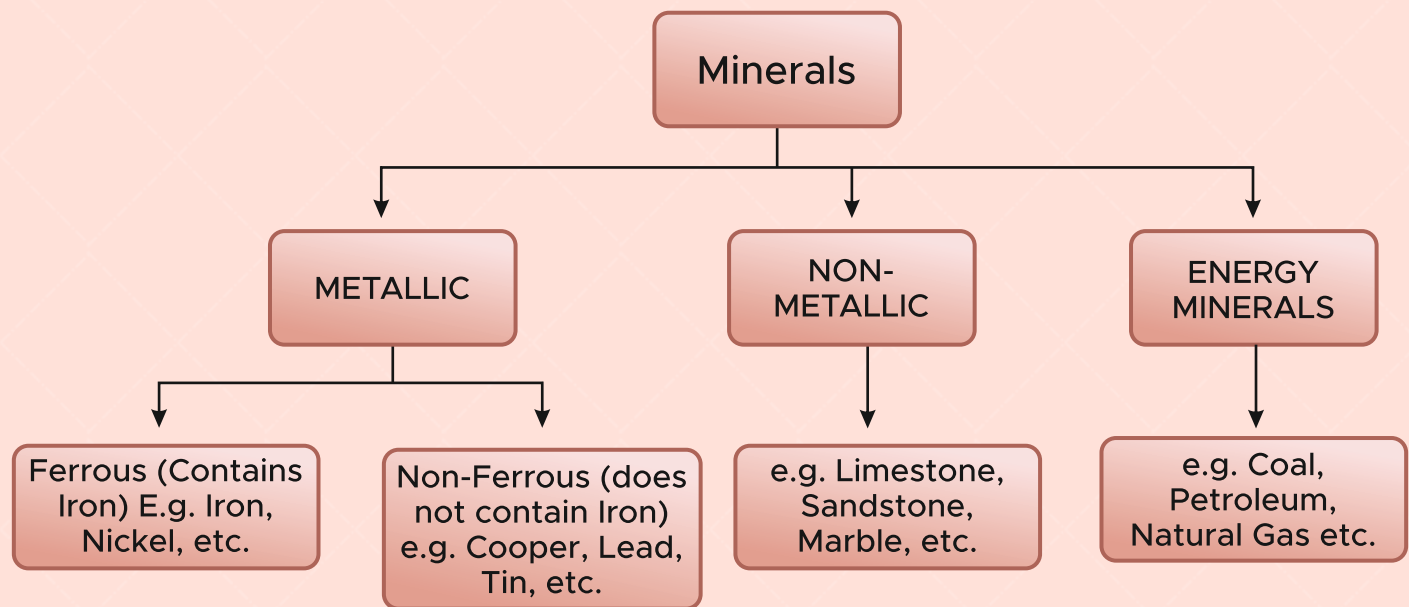


Quick Revision Module
(UPSC Prelims 2022) Geography



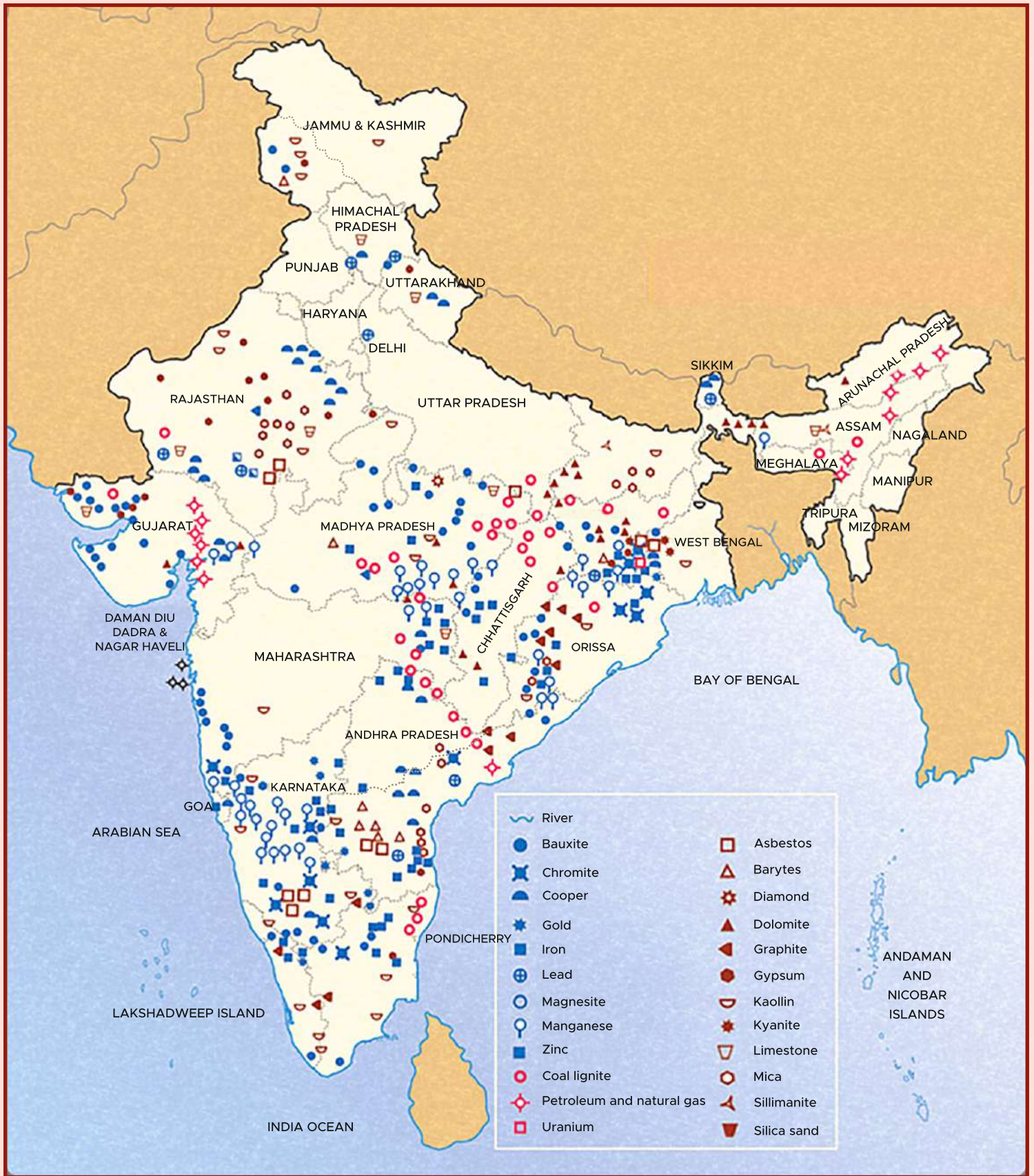
MINERAL RESOURCES



REGIONAL DISTRIBUTION OF MINERALS IN INDIA

Most of the metallic minerals in India occur in the peninsular plateau region in the old crystalline rocks.

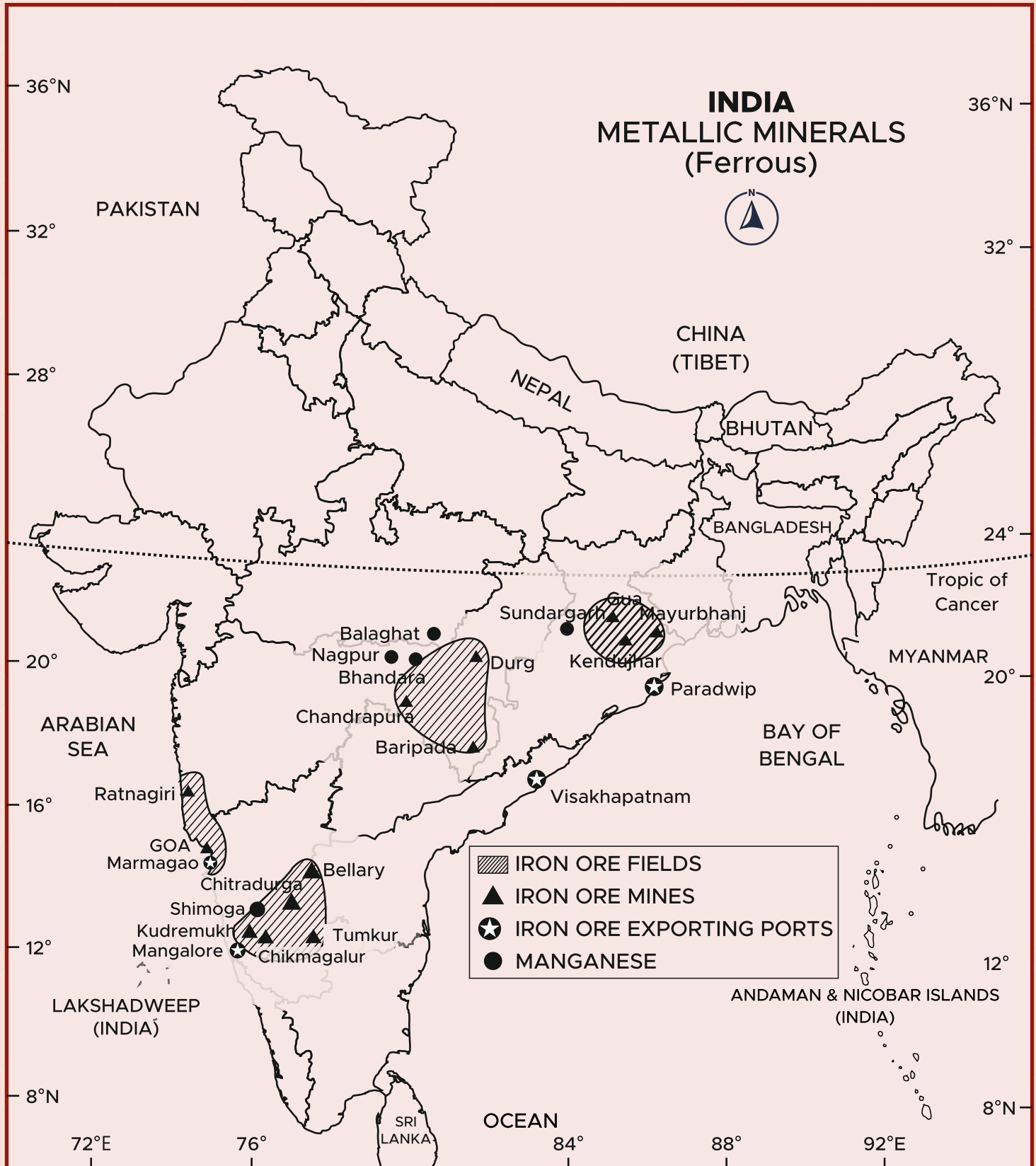
The North-Eastern Plateau Region	<ul style="list-style-type: none"> This belt covers Chota Nagpur (Jharkhand), Odisha Plateau, West Bengal and parts of Chhattisgarh. It has variety of minerals viz. iron ore, coal, manganese, bauxite, mica. The Chota Nagpur plateau is also known as mineral heart land of India
The Central Belt	<ul style="list-style-type: none"> This belt encompassing parts of Chhattisgarh, Madhya Pradesh, Andhra Pradesh and Maharashtra is the second largest mineral belt in the country. Large deposits of manganese, bauxite, limestone, marble, coal, mica, iron ore are available here.
The South-Western Plateau Region	<ul style="list-style-type: none"> This belt extends over Karnataka, Goa and contiguous Tamil Nadu uplands and Kerala. This belt is rich in ferrous metals and bauxite. It also contains high grade iron ore, manganese and limestone. This belt packs in coal deposits except Neyveli lignite. It does not have mica and copper deposits.
The North-Western Region	<ul style="list-style-type: none"> This belt extends along Aravali in Rajasthan and part of Gujarat and minerals are associated with Dharwar system of rocks. This belt recently developed holds great promise for mining of the non-ferrous metals. Copper, zinc has been major minerals. Rajasthan is rich in building stones i.e. sandstone, granite, marble. Gypsum and Fuller's earth deposits are also extensive. Dolomite and limestone provide raw materials for cement industry.





FERROUS MINERALS

India has the **largest reserve of iron ore in Asia**. India is the **fifth largest exporter of iron** in the world. It is used for manufacturing articles from safety pins to ships. It is often mixed with lime, magnesium, phosphorous, silicon, etc.





TYPES OF IRON ORES:

Haematite	<ul style="list-style-type: none"> It is also known as red-ochre, as it is reddish in colour. The iron contents in this type ranges from about 60-70 %. Most of the iron ore reserves in India belong to this type.
Magnetite	<ul style="list-style-type: none"> It is the best quality of iron ore and contains iron > 70 %. The colour of the ore is dark brown to blackish and is known as black ore. It has magnetic properties.
Limonite	<ul style="list-style-type: none"> It is yellow or light brown in colour and the iron contents ranges from about 40-60 %. It is called hydrated iron oxide, when the iron ore is mixed with oxygen and water. Its mining is easier and cheaper.
Siderite	<ul style="list-style-type: none"> It is an inferior variety of iron ore and has many impurities. The iron contents range from about 20-40 %. It is also called iron carbonate.

MANGANESE

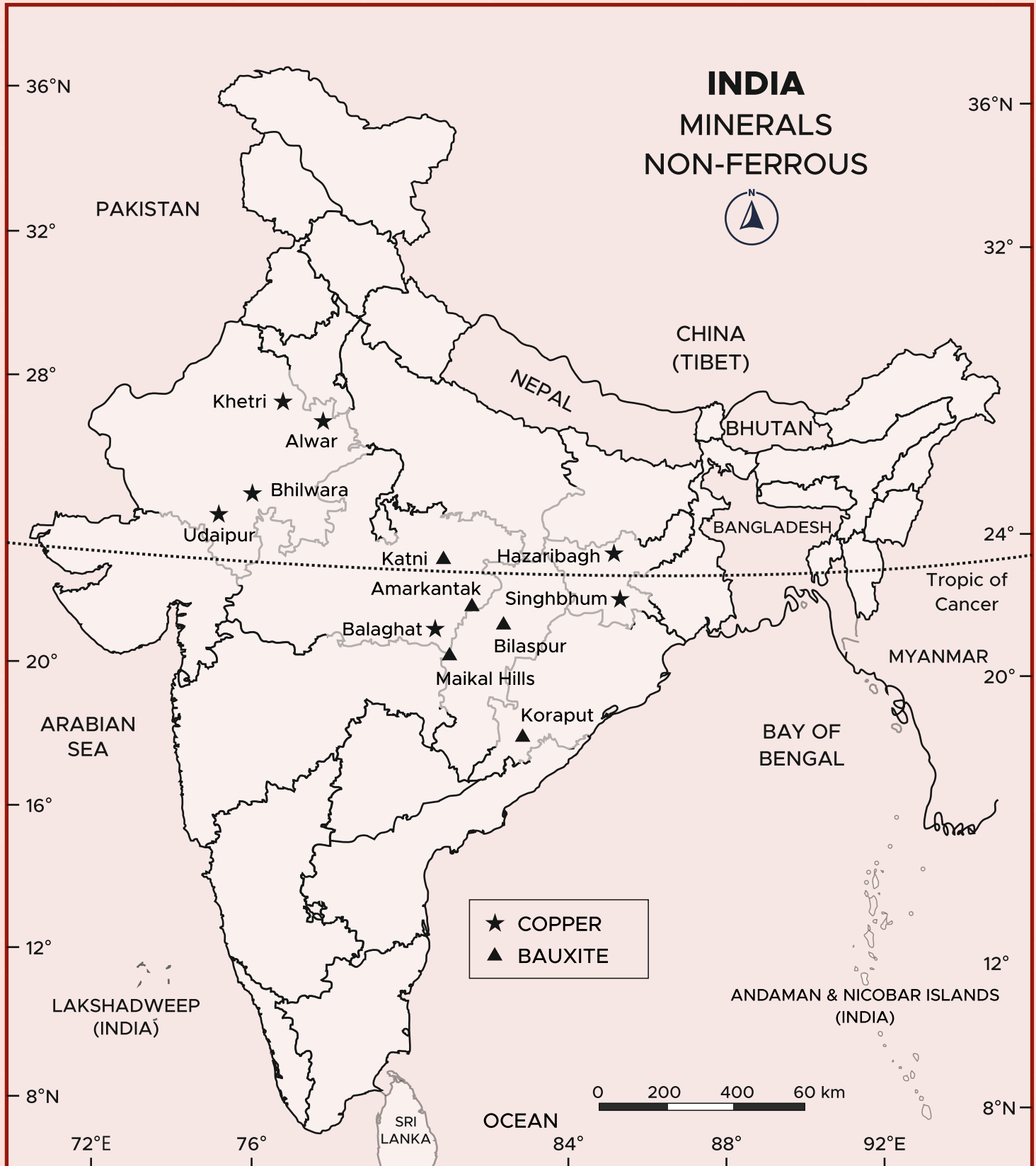
India is the **world's fifth largest producer** of manganese ore and has **second largest ore reserves** in the world after Zimbabwe.

Uses of Manganese	<ul style="list-style-type: none"> It is a black hard iron like metal and is an important raw material for smelting of iron ore. It is also used for manufacturing ferrous alloys. It is also used for the manufacture of bleaching powder, insecticides, paints, glazed pottery, matches, batteries and china-clay.
Distribution of Manganese	<ul style="list-style-type: none"> It is mainly associated with Dharwar system. Odisha is the leading producer of Manganese. Major mines in Odisha : Located in the central part of the iron ore belt of India, particularly in Bonai, Kendujhar, Sundergarh, Gangpur, Koraput, Kalahandi and Bolangir. Karnataka is another major producer and here the mines are located in Dharwar, Bellary, Belgaum, North Canara, Chikmagalur, Shimoga, Chitradurg and Tumkur. Maharashtra, Madhya Pradesh, Andhra Pradesh, Goa and Jharkhand are minor producers of manganese.



NON-FERROUS MINERALS:

India has limited reserves of non-ferrous minerals except bauxite. Copper, bauxite, gold, silver, tungsten, nickel, cobalt are major non-ferrous minerals.





NON-FERROUS MINERALS	USES	LOCATION
COPPER	<ul style="list-style-type: none"> Used for making utensils and coins. Electrical industry for making wires, electric motors, transformers and generators. 	<ul style="list-style-type: none"> Singhbhum district in Jharkhand, Balaghat district in Madhya Pradesh and Jhunjhunu and Alwar districts in Rajasthan.
BAUXITE	<ul style="list-style-type: none"> Properties like lightness, strength, malleability, ductility, heat and electrical conductivity and resistance to atmospheric corrosion makes Aluminium a very useful metal. 	<ul style="list-style-type: none"> Found mainly in tertiary deposits and is associated with Laterite rocks. Kalahandi and Sambalpur in Odisha is the leading producers in the country. Jharkhand, Gujarat, Chhattisgarh, Madhya Pradesh and Maharashtra are other major producers. Bhavanagar, Jamnagar in Gujarat have the major deposits. Chhattisgarh has bauxite deposits in Amarkantak plateau while Katni-Jabalpur area and Balaghat in M.P. have important deposits of bauxite.
LEAD	<ul style="list-style-type: none"> Occurs as a cubic sulphide known as Galena. 	<ul style="list-style-type: none"> It occurs in India in the Himalayas, Tamil Nadu, Rajasthan, Andhra Pradesh and Jharkhand. Rajasthan is the leading producer of lead. About 75% of Indian requirements are met by imports mainly from Australia, Canada and Myanmar.
ZINC	<ul style="list-style-type: none"> The mixed ore containing lead and zinc and is mainly used for alloying and manufacturing galvanized sheets. It is also used for dry batteries, white pigments, electrodes, textiles etc. 	<ul style="list-style-type: none"> More than 99% of zinc in India is produced in Zawar area in Udaipur district of Rajasthan. Most of the industrial needs are met via imports from Zaire, Canada, Australia and Russia.
GOLD	<ul style="list-style-type: none"> Used for making ornaments and usage as international currency. 	<ul style="list-style-type: none"> Main gold fields in India namely, Kolar Gold Field (deepest in the world), Hutti Gold field in Raichur district of Karnataka and Ramgiri Gold field in Anantpur district of Andhra Pradesh. Alluvial gold is obtained from the sands of the Subarnarekha River in Jharkhand. Such deposits are called placer deposits and the process of recovering gold from these sources is called panning.
SILVER	<ul style="list-style-type: none"> Used in manufacture of chemicals, electroplating, photography, for colouring glasses etc. 	<ul style="list-style-type: none"> India has limited resources of silver ore. Majority of production comes from Zawar mines in Udaipur district of Rajasthan.



NON- METALLIC MINERALS

MICA	<ul style="list-style-type: none"> ☛ Mainly used in the electrical and electronic industries. ☛ Can be split into very thin sheets which are tough and flexible. 	<ul style="list-style-type: none"> ☛ Rajasthan have the largest deposits of mica. ☛ Produced in Hazaribagh plateau of Jharkhand, Nellore district of Andhra Pradesh, Bhilwara and Udaipur in Rajasthan followed by Tamil Nadu, Karnataka, West Bengal and Madhya Pradesh. ☛ India has near monopoly in the production of mica, producing about 60% of the world's total production.
LIMESTONE	<ul style="list-style-type: none"> ☛ Used for large variety of purposes like cement industry, iron and steel industry, chemical industry etc. 	<ul style="list-style-type: none"> ☛ Produced in the states of Madhya Pradesh, Rajasthan, Andhra Pradesh, Gujarat, Chhattisgarh and Tamil Nadu. ☛ Madhya Pradesh is the largest producer of limestone in India.
DOLOMITE	<ul style="list-style-type: none"> ☛ Limestone with more than 10% of magnesium is called dolomite, when percentage rises to about 45%, it is called true dolomite. ☛ Chiefly used in metallurgical activities; as refractories; as blast furnace flux; as a source of magnesium salts and in fertilizer and salt industry. 	<ul style="list-style-type: none"> ☛ Odisha, Chhattisgarh, Andhra Pradesh, Jharkhand, Rajasthan and Karnataka are the major producers. ☛ Odisha is the largest producer of dolomite.

ATOMIC MINERALS

Uranium and thorium are the main atomic minerals; Beryllium, Lithium and Zirconium are the other minerals.

URANIUM	<ul style="list-style-type: none"> ☛ Uranium deposits occur in Singhbhum and Hazaribagh districts of Jharkhand, Gaya district of Bihar, and in the sedimentary rocks in Saharanpur district of Uttar Pradesh. ☛ Largest source of uranium comprises the monazite sands, both beach and alluvial. The largest concentration of monazite sand is on the Kerala coast. ☛ Some uranium is found in the copper mines of Udaipur in Rajasthan. India produces about 2% of world's uranium reserves.
THORIUM	<ul style="list-style-type: none"> ☛ Thorium is also derived from monazite which contains 10% thorium. ☛ Kerala, Bihar, Jharkhand, Tamil Nadu and Rajasthan are the main producers.



ENERGY SOURCES:

Conventional		Non conventional
Conventional non-renewable energy	Conventional renewable energy	<ol style="list-style-type: none"> 1. Solar energy 2. Hydro power 3. Wind energy 4. Nuclear energy 5. Hydrogen energy 6. Geothremal energy 7. Bio gas 8. Tidal energy 9. Bio-fuel
<ul style="list-style-type: none"> Mostly Fossil Fuels found under the ground. Coal, oil, natural gas etc. are the examples. 	<ul style="list-style-type: none"> Mostly non-fossil fuels seen above the ground. Fire wood, cattle dung from vegetable wastes, wood charcoal etc. are the examples. 	

CONVENTIONAL SOURCES OF ENERGY





COAL:

Depending upon the percentage of carbon present, the coal can be grouped in four types, such as peat, lignite, bituminous and anthracite.

PEAT	<ul style="list-style-type: none"> First stage of coal formation. High percentage of moisture and volatile matter. The carbon content < 40%. Low heating capacity reduces its value as an industrial fuel.
LIGNITE	<ul style="list-style-type: none"> Regarded as the next stage of coal formation after peat. Also known as the brown coal. Lignite is soft, but more compact than peat. Carbon content: 40 - 60 %. Large percentage of moisture and less amount of combustible matter. In India, lignite is mostly found in Rajasthan, Tamil Nadu, Assam and Jammu and Kashmir states.
BITUMINOUS	<ul style="list-style-type: none"> Hard and compact variety of coal. The carbon content: 60 - 80 %. Almost 80 per cent of the world's output : Bituminous Coke is mainly used in the iron and steel industry. Bituminous coal is found in Jharkhand, Orissa, West-Bengal, Madhya Pradesh and Chhattisgarh.
ANTHRACITE	<ul style="list-style-type: none"> It is the hardest and the best quality of coal. The carbon content: 80 - 90 %. Anthracite, practically, has no volatile matter. Only about 5 per cent of the world's total coal is anthracite. In India this type of coal is found only in Jammu and Kashmir and that too in very small quantity.
IMPORTANT COAL REGIONS OF INDIA	<ul style="list-style-type: none"> Gondwana coal fields of India are located in Damodar Valley. They lie in Jharkhand-Bengal coal belt and the important coal fields in this region are Raniganj, Jharia, Bokaro, Giridih, Karanpura. The other river valleys associated with coal are Godavari, Mahanadi and Son. The most important coal mining centres are Singrauli in Madhya Pradesh (part of Singrauli coal field lies in Uttar Pradesh), Korba in Chhattisgarh, Talcher and Rampur in Odisha, Chanda-Wardha, Kamptee and Bander in Maharashtra and Singareni and Pandur in Andhra Pradesh.





PETROLEUM:



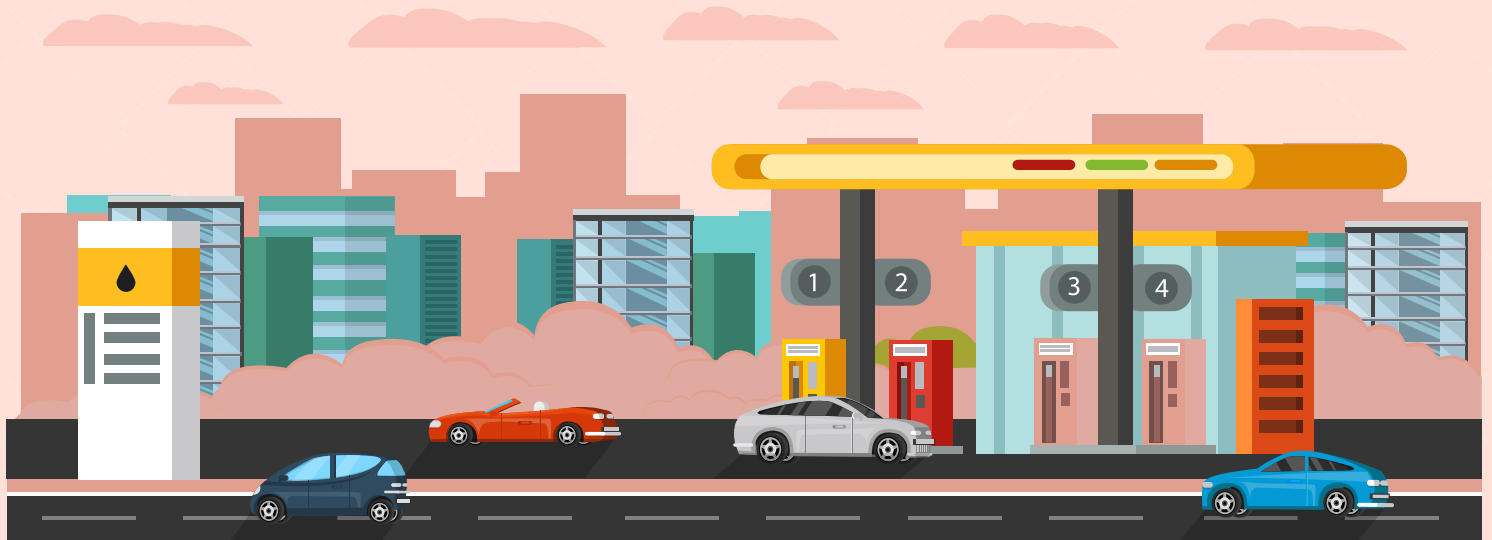


PETROLEUM	<p>Origin</p> <ul style="list-style-type: none"> Crude petroleum consists of hydrocarbons of liquid and gaseous states. The crude petroleum deposits are found only in the sedimentary rock basins of marine origin. But all sedimentary rocks do not contain mineral oil. <p>Potential Reserves</p> <ul style="list-style-type: none"> The Terai zone running parallel to the Himalayas from Jammu and Kashmir to Assam; River basins of Ganga, Satluj, etc. including deltaic tracts of Ganga, Mahanadi, Godavari, Krishna and Kaveri; The continental shelf along the Western Coast, Gulf of Cambay, and the islands in the Arabian Sea and the Bay of Bengal. Recently found in exploratory wells in Krishna-Godavari and Kaveri basin on the east coast.
PIPELINES	<ul style="list-style-type: none"> Naharkatia- Nunmati – Barauni Pipeline Mumbai High – Mumbai – Ankaleshwar – Kayoli Pipeline Salaya- Koyali – Mathura Pipeline Hajira – Bijapur – Jagdishpur (HBJ) Gas Pipeline Jamnagar – Loni LPG Pipeline Kandla – Bhatinda Pipeline

NATURAL GAS

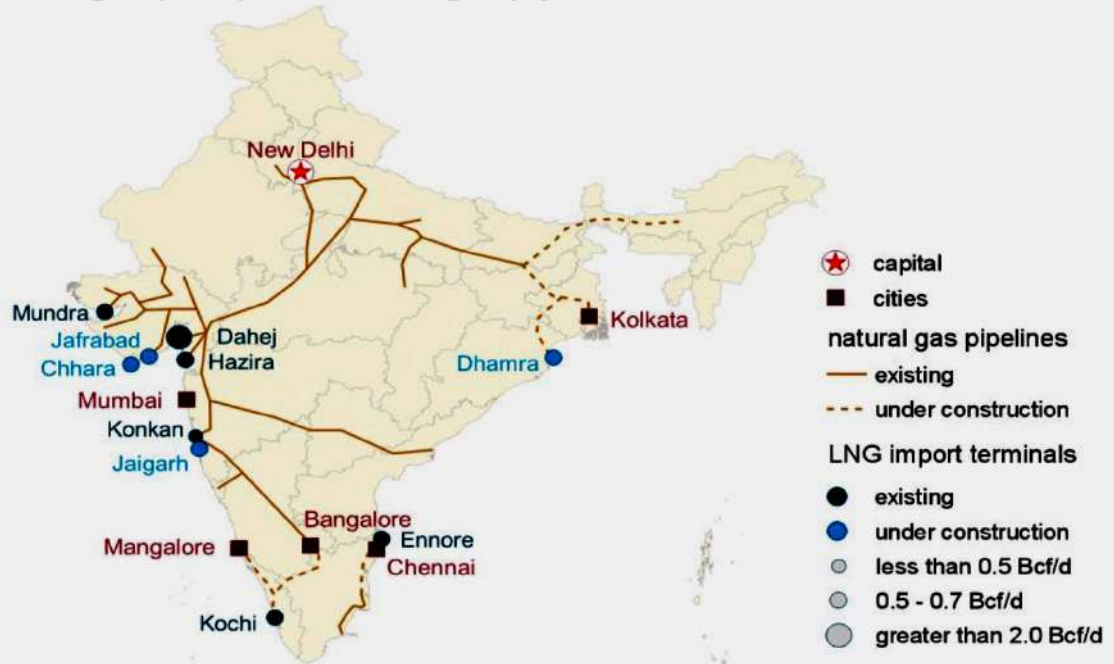
Natural gas is often found dissolved in oil or as a gas cap above the oil.

- Sometimes, pressure of natural gas forces oils up to the surface. Such natural gas is known as associated **gas or wet gas**.
- Some reservoirs contain gas and no oil. This gas is termed **non-associated gas or dry gas**.
- Often natural gases contain substantial quantities of **hydrogen sulphide** or other organic sulphur compounds. The gas is known as **“sour gas.”**
- Coalbed methane is called ‘sweet gas’ because of its lack of hydrogen sulphide.**





India liquefied natural gas (LNG) and natural gas pipeline infrastructure

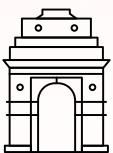


NATURAL GAS

- Exclusive reserves have been located along the eastern coast (**Tamil Nadu, Odisha and Andhra Pradesh**) as well as in **Tripura, Rajasthan and off-shore wells in Gujarat and Maharashtra**.
- KG basin, Assam, Gulf of Khambhat, Cuddalore district of Tamil Nadu, Barmer in Rajasthan are other locations.

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DELHI



LUCKNOW



JAIPUR



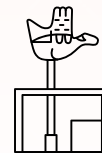
HYDERABAD



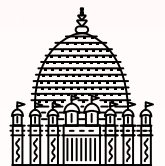
PUNE



AHMEDABAD



CHANDIGARH



GUWAHATI